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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/543,150	07/25/2005	Susumu Saisho	274417US0PCT	2650

22850 7590 08/14/2009
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ALEXANDRIA, VA 22314

EXAMINER

ZIMMERMAN, JOHN J

ART UNIT	PAPER NUMBER
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1794

NOTIFICATION DATE	DELIVERY MODE
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08/14/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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FOURTH OFFICE ACTION

Amendments

1. This Fourth Office Action considers the correspondence titled "AMENDMENT AND REQUEST FOR RECONSIDERATION" received May 27, 2009. Claims 1-2 and 4-17 are pending in this application.

Claim Objections

2. Claims 7 and 17 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. The independent claims require a brazing material laminated on the side of the core material opposite the cladding material. Claims 7 and 17 do not appear to further limit the independent claims. In addition, it appears that claims 7 and 17 are essentially duplicate claims.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 1-2 and 4-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The independent claims now require "a brazing material

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laminated on the side of the core material opposite the cladding material" (e.g. claim 1, lines 5-6; claim 2, lines 6-7). But, the independent claims also recite "a cladding material cladded on at least one side of the core material" (e.g. claim 1, line 3; claim 2, line 3). Thus it appears that the independent claims allow for cladding material on both sides of the core and this embodiment conflicts with the limitation requiring a brazing material on the opposite side of the core from the cladding material. Clarification is required.

Claim Rejections - 35 USC § 102/103

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-2, 4-5, 7-12 and 17 are rejected under 35 U.S.C. 103(a) as obvious over Doyle (U.S. Patent 3,310,389) in view of Young (U.S. Patent 2,900,713) or Giovannucci (U.S. Patent 3,386,221).

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8. Doyle discloses an aluminum sheet having a core material made of aluminum alloy and an aluminum cladding material made from 0.7 wt.% Mg, 1.0 wt.% Si, 0.55 wt.% Mn and 1.0 wt.% Zn (e.g. see Example 1; column 4, lines 15-47). In addition, Doyle discloses that the cladding can be an aluminum alloy containing 0.4-1.4 wt.% Mg, 0.2-1.3 wt.% Si, 0.0-1.0 wt.% Mn, 0.0-0.3 wt.% Cr and 0.8-1.2 wt.% Zn (e.g. see claim 11). Doyle's corrosion resistant aluminum cladding may be on one or both sides of the aluminum core sheet (e.g. see column 1, lines 12-28). The composition ranges of Doyle's cladding fall within or overlap the claimed aluminum alloy ranges. Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549. While it is noted that the compositions in the pending claims may use the term "consisting essentially of", this term allows for additional alloying constituents which do not affect the basic and novel characteristics of the invention, *Ex parte Davis, et al.*, 80 USPQ 448 (PTO Bd. App. 1948); *In re Janakirama-Rao*, 137 USPQ 893 (CCPA 1963). There is no factual evidence of record that any additional constituents of Doyle affect the basic and novel characteristics of the invention and therefore any additional constituents would not be prohibited by the "consisting essentially" claim language. See MPEP 2111.03. Doyle is directed to clad aluminum aircraft materials (e.g. column 1, lines 12-28) and may differ from the pending claims in that Doyle may not require a brazing material clad on the opposite side of the cladding material. Young (e.g. column 1, line 15 - column 2, line 6) and Giovannucci (e.g. column 1, lines 32-47), however, clearly shows that it is conventional to apply braze material to aluminum aircraft materials in order to join them to

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form aircraft structural elements. In view of Young or Giovannucci, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply braze to the clad aluminum aircraft material of Doyle in order to form larger aircraft structures from the stock clad material. Examples of larger structures in Young and Giovannucci are panels, wings, fins and outer skins. Applying the braze to the opposite side of the core from the cladding sheet would have been obvious to one of ordinary skill in the art at the time the invention was made since it would be understood that Doyle's cladding layer should face outward or away from the joint side of the aircraft structure in order to take advantage of the corrosion resistance offered by the cladding layer.

9. Claims 1-2 and 4-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Syslak (WO 02/090031).

10. Syslak discloses that an aluminum multilayer brazing sheet can be made having an inner aluminum alloy cladding layer comprising 0.7-1.5 wt.% Mn, 0-1.2 wt.% Si, 0-0.6 wt.% Fe, 1.0-2.0 wt.% Zn, 0.5 wt.% Mg and 0-0.5 wt.% Ti (e.g. see page 5, lines 22-26). In addition, Syslak discloses that the core material is an aluminum alloy comprising 0.7-1.5 wt.% Mn, 0-0.6 wt.% Si, 0-0.6 wt.% Fe, 0-0.6 wt.% Zn, 0-1.0 wt.% Cu, 0-0.4 wt.% Mg and 0-0.5 wt.% Ti (e.g. see page 5, lines 6-13). The brazing alloy layer can comprise 4-14 wt.% Si, 0-0.8 wt.% Fe, 0-0.5 wt.% Cu, 0-0.5 wt.% Mg, 0-0.5 wt.% Mn, 0.1-2 wt.% Zn and 0-0.5 wt.% Ti (e.g. see page 5, lines 1-5) is clad on one or both sides of multilayer sheet (e.g. see page 3, lines 5-15). Higher Zn content in the cladding layer renders the cladding layer less noble than the core layer (e.g. see

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page 6, lines 9-19). The braze layer can be arranged on one side of the core and the inner cladding layer can be arranged on the other side of the core (e.g. see claim 4). Although the alloying constituent ranges for the layers of Syslak may not have the same endpoints as the ranges described in the rejected claims, the ranges do overlap. Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549. See MPEP 2144.05. While it is noted that the compositions in the claims may use the term "consisting essentially of", this term allows for additional alloying constituents which do not affect the basic and novel characteristics of the invention, *Ex parte Davis, et al.*, 80 USPQ 448 (PTO Bd. App. 1948); *In re Janakirama-Rao*, 137 USPQ 893 (CCPA 1963). There is no factual evidence of record that the additional constituents of Syslak affect the basic and novel characteristics of the invention and therefore they are not prohibited by the "consisting essentially" claim language. See MPEP 2111.03. Syslak may differ from the claims in that the magnesium content of Syslak's cladding is 0.5 wt.% Mg and the claimed magnesium content starts at 0.52 wt.% Mg. However, one of ordinary skill in the art would not expect a two hundredth of a percent difference in magnesium content to result in a patentable distinction over the alloy of the Syslak. In addition, there is no factual evidence of record that a difference of 0.02 wt.% Mg results in a patentable distinction. A *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. See *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05.

Response to Arguments

11. Applicant's arguments filed May 27, 2009 have been fully considered but they are not persuasive with regards to the pending rejections.

12. Applicant's amendments to the independent claims (e.g. removal of "optionally") have created objections to the claims under 37 CFR 1.75(c) and rejections of the claims under 35 U.S.C. 112, second paragraph, as noted above.

13. Applicant has amended independent claims 1 and 2 to require a brazing material layer. Applicant argues that Doyle (U.S. Patent 3,310,389) no longer anticipates or makes obvious the claims since Doyle does not disclose or suggest an aluminum sheet with a brazing material laminated on the side of the core material opposite the cladding material. In response to the amendment, Young (e.g. column 1, line 15 - column 2, line 6) and Giovannucci (e.g. column 1, lines 32-47), have been applied to clearly show that it is conventional to apply braze material to aluminum aircraft materials in order to join them to form aircraft structural elements. In view of Young or Giovannucci, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply braze to the clad aluminum aircraft material of Doyle in order to form larger aircraft structures from the clad material. Examples of larger structures in Young and Giovannucci are panels, wings, fins and outer skins. Applying the braze to the opposite side of the core from the cladding sheet would have been obvious to one of ordinary skill in the art at the time the invention was made since it would be understood that Doyle's cladding layer should

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face outward from the joint of an aircraft structure in order to take advantage of its corrosion resistance.

14. Regarding applicant's argument that the solidus temperature of Doyle's core material would melt during brazing (e.g. see page 9 of applicant's arguments), it should be noted that no particular brazing temperature is required of the materials of the pending claims and therefore it is not clear how applicant has determined that brazing must occur at 600 °C. Bose (U.S. Patent 5,407,124) has been cited to clearly show that brazing temperatures include much lower temperatures than that cited by applicant (e.g. see Figure 1).

15. Regarding applicant's argument that the Declaration under 37 C.F.R. 1.132 of Toshiki Ueda (received May 27, 2009) establishes the effect on post brazing strength of the claimed composition for Mg (e.g. see page 10 of applicant's arguments), the examiner notes that the too many alloying constituents (e.g. Si, Mn, Zn content) were simultaneously varied in the results of Table 1 to directly attribute the post brazing strength to the Mg content alone. In any event, since Doyle has a specific working example at 0.7 wt.% Mg (e.g. see Example 1), it is not clear how applicant believes that the post brazing strength data presented in the 132 declaration establishes any different results than those that would be expected of Doyle. Regarding the argument that Doyle is not concerned with post-brazing strength, it is not necessary that Doyle have the same purpose in mind as applicant.

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16. Regarding applicants argument that Doyle's disclosure is so broad to encompass a very large number of possible distinct compositions (e.g. see page 11 of applicant's arguments), it should be noted that Doyle's cladding alloy only involves six total alloying constituents (e.g. see claim 11) and one of them may be zero (e.g. 1.0-0.3 wt.% Cr). Doyle's other five constituents (e.g. Mg, Si, Mn, Zn and Al) are the same five constituents disclosed for applicant's cladding alloy (e.g. see pages 4-5 of applicant's specification). Thus it is unclear how applicant has determined that Doyle is too broad in disclosing too many possible distinct compositions. In any event, Doyle discloses a specific aluminum cladding material made from 0.7 wt.% Mg, 1.0 wt.% Si, 0.55 wt.% Mn and 1.0 wt.% Zn (e.g. see Example 1; column 4, lines 15-47) which falls directly in applicant's claimed aluminum alloy cladding material range. Since Doyle has an example which falls directly in the claimed cladding alloy range, applicant's reliance on *In re Baird* (see page 11 of applicant's arguments) is not well based since *Baird* addresses situations where the disclosure of the reference is so broad as to present nearly infinite possibilities.

17. Regarding the rejection of the claims under 35 U.S.C. 103(a) as being unpatentable over Syslak (WO 02/090031), applicant argues Syslak differs from the claims in that the magnesium content of Syslak's cladding is 0.5 wt.% Mg and the claimed magnesium content starts at 0.52 wt.% Mg. However, one of ordinary skill in the art would not expect a two hundredth of a percent difference in magnesium content to result in a patentable distinction over the alloy of the Syslak. In addition, there is no factual evidence of record that a difference of 0.02 wt.% Mg results in a patentable distinction. A *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would

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have expected them to have the same properties. See *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). See MPEP 2144.05. Applicant argues that the Declaration under 37 C.F.R. 1.132 of Toshiki Ueda (received May 27, 2009) does establish that a 0.02% difference results in a difference in post brazing strength as shown by Examples 1, 2 and 10 (e.g. see page 12 of applicant's response). The examiner notes that the too many alloying constituents (e.g. Si, Mn, Zn content) were simultaneously varied in the results of Table 1 to directly attribute differences in post brazing strength to the small change Mg content alone. The examiner's observation is bolstered by the fact that many examples in Table 1 (e.g. 4, 8, 9, etc. . .) contain considerably more Mg than Example 1, but do not result in a higher post brazing strength. Therefore, applicant has not established that a 0.02% difference in Mg is a patentable distinction over Syslak. As noted earlier, it is not necessary that the reference have the same purpose in mind as the purpose envisioned by applicant.

Conclusion

18. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. The applicant has amended independent claims to require a brazing material laminated on the core material. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

19. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Zimmerman whose telephone number is (571) 272-1547. The examiner can normally be reached on 8:30am-5:00pm, M-F. Supervisor Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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jjz

August 4, 2009